

SEQUENCE LISTING



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<120> NEMATODE-~~EXTRACTED~~ SERINE PROTEASE INHIBITORS AND ANTICOAGULANT PROTEIN

<130> 018813/0272487

<140> 09/498,556
<141> 2000-04-02

<150> 08/809,455
<151> 1997-04-17

<150> PCT/US95/13231
<151> 1995-10-17

<150> 08/486,399
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<151> 1994-10-18

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<170> PatentIn version 3.1

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ccgggtcccg ctgcttgcgt atgcgaagac ggattctaca gagacacggat gatcggcgac      180
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Ile Cys Arg Ser Arg Gly Cys Leu Leu Pro Pro Ala Cys Val Cys Lys	
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gaa tgc gac caa cat gag att ata cat gtc t gaacgagaaa gcaacaataa cc	344
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gaa tgc gag cac aga tgc aat gag gag gaa aat gag gaa agg gac gag 194
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gaa aga ata acg gca tgc ctc atc cgt gtg tgt ttc cgt cct ggt gct 242
Glu Arg Ile Thr Ala Cys Leu Ile Arg Val Cys Phe Arg Pro Gly Ala
60 65 70
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Cys Val Cys Lys Asp Gly Phe Tyr Arg Asn Arg Thr Gly Ser Cys Val
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Glu Glu Asp Asp Cys Glu Tyr Glu Asn Met Glu Phe Ile Thr Phe Ala
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atgaccgaag cttccacctt tctatacata tcttcactgc ttgacaggct tctcgacaat 353

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Cys Asn Asp Met Glu Ile Ile Thr Phe Ala Pro Glu Thr Lys	
65 70 75	
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Leu	Leu	Leu	Ile	Ser	Leu	Cys	Ser	Gly	Lys	Ala	Ala	
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							15	20		25		
ctc	aat	gaa	agg	ctg	gac	tgt	ggc	aat	ctg	aag	caa	146
Leu	Asn	Glu	Arg	Leu	Asp	Cys	Gly	Asn	Leu	Lys	Gln	
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gac	gac	aat	atg	gag	att	atc	act	ttt	cca	cca	gaa	338
Asp	Asp	Asn	Met	Glu	Ile	Ile	Thr	Phe	Pro	Pro	Glu	
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							95	100		105		
ccc	gat	gaa	tgg	ttc	gac	tac	tgt	gga	aat	tat	aag	386
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atc	atc	act	ttt	cca	ccg	gaa	acc	aaa	cat	tgaccagagg	ctccaaactct	584
Ile	Ile	Thr	Phe	Pro	Pro	Glu	Thr	Lys	His		cgct	
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Pro Lys Cys Asn Glu Pro Met Pro Asp Ile Cys Thr Leu Asn Cys Ile
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gtg aac gtg tgt cag tgc aaa ccc ggc ttc aag cgc gga ccg aaa gga      249
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70	75	80	85	
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Tyr Val Ile Leu Ser Val Lys Ala Ala Ile Phe Ile Phe Asp Val Lys				
90	95	100		
caa aaa atc gtt tct tat ttg gat tgg gat aaa ggt gga ggc tca ggc				390
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Gly Ile Pro Leu Leu Arg Phe Leu Gly Phe Leu Leu Val Thr Leu			
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Phe Gly Tyr Leu Leu Thr Phe Leu Lys Lys Gly Phe Gly Lys Ile Ala			
25	30	35	
att gct att tca ttg ttt ctt gct ctt att att ggg ctt aac tca att			198
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ctt gtg ggt tat ctc tct gat att agc gca caa tta ccc tct gat ttt			246
Leu Val Gly Tyr Leu Ser Asp Ile Ser Ala Gln Leu Pro Ser Asp Phe			
55	60	65	
gtt cag ggc gtt cag tta att ctc ccg tct aat gcg ctt ccc tgt ttt			294
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70	75	80	85

tat gtt att ctc tct gta aag gct gct att ttc att ttt gac gtt aaa	342
Tyr Val Ile Leu Ser Val Lys Ala Ala Ile Phe Ile Phe Asp Val Lys	
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40 45 50	
ctt gtg ggt tat ctc tct gat att agc gca caa tta ccc tct gat ttt	246
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70 75 80 85	
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<221> misc-feature
<223> Description of Artifical Sequence: pDONG vector linker sequence

<400> 18

Gly Gly Gly Ser Gly Gly
 1           5

<210> 19
<211> 430
<212> DNA
<213> Ancylostoma ceylanicum

<220>
<221> CDS
<222> (10) .. (282)

<220>
<221> misc-feature
<223> "w" stands for a or t

<400> 19

gaattccgg ctg gtw tcc tac tgc agt gga aaa gca acg atg cag tgt ggt      51
      Leu Val Ser Tyr Cys Ser Gly Lys Ala Thr Met Gln Cys Gly
      1           5           10
gag aat gaa aag tac gat tcg tgc ggt agc aag gag tgc gat aag aag      99
      Glu Asn Glu Lys Tyr Asp Ser Cys Gly Ser Lys Glu Cys Asp Lys Lys
      15          20          25          30
tgc aaa tat gac gga gtt gag gag gaa gac gac gag gaa cct aat gtg      147
      Cys Lys Tyr Asp Gly Val Glu Glu Asp Asp Glu Glu Pro Asn Val
      35          40          45
cca tgc cta gta cgt gtg tgt cat caa gat tgc gta tgc gaa gaa gga      195
      Pro Cys Leu Val Arg Val Cys His Gln Asp Cys Val Cys Glu Glu Gly
      50          55          60
ttc tat aga aac aaa gat gac aaa tgt gta tca gca gaa gag tgc gaa      243
      Phe Tyr Arg Asn Lys Asp Asp Lys Cys Val Ser Ala Glu Asp Cys Glu
      65          70          75
ctt gac aat atg gac ttt ata tat ccc gga act cga aac tgaacgaagg ctc      295
      Leu Asp Asn Met Asp Phe Ile Tyr Pro Gly Thr Arg Asn
      80          85          90
cattcttgct gcacaagatc gattgtctct cccctgcattc tcagtagttt tgctacattg      355
tatatggtag caaaaaatata gcttagggag aataaaaatct ttacctataat ttaatcaatg      415
aagtattctc tttct      430

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<210> 20
<211> 100
<212> PRT
<213> *Ancylostoma caninum*

<400> 20

Met Lys Met Leu Tyr Ala Ile Ala Ile Met Phe Leu Leu Val Ser Leu
1 5 10 15
Cys Ser Ala Arg Thr Val Arg Lys Ala Tyr Pro Glu Cys Gly Glu Asn
20 25 30
Glu Trp Leu Asp Asp Cys Gly Thr Gln Lys Pro Cys Glu Ala Lys Cys
35 40 45
Asn Glu Glu Pro Pro Glu Glu Asp Pro Ile Cys Arg Ser Arg Gly
50 55 60
Cys Leu Leu Pro Pro Ala Cys Val Cys Lys Asp Gly Phe Tyr Arg Asp
65 70 75 80
Thr Val Ile Gly Asp Cys Val Arg Glu Glu Cys Asp Gln His Glu
85 90 95
Ile Ile His Val
100

<210> 21
<211> 98
<212> PRT
<213> *Ancylostoma caninum*

<400> 21

Met Lys Met Leu Tyr Ala Ile Ala Ile Met Phe Leu Leu Val Ser Leu
1 5 10 15
Cys Ser Thr Arg Thr Val Arg Lys Ala Tyr Pro Glu Cys Gly Glu Asn
20 25 30
Glu Trp Leu Asp Val Cys Gly Thr Lys Lys Pro Cys Glu Ala Lys Cys
35 40 45
Ser Glu Glu Glu Glu Asp Pro Ile Cys Arg Ser Phe Ser Cys Pro
50 55 60
Gly Pro Ala Ala Cys Val Cys Glu Asp Gly Phe Tyr Arg Asp Thr Val
65 70 75 80
Ile Gly Asp Cys Val Lys Glu Glu Cys Asp Gln His Glu Ile Ile
85 90 95
His Val

<210> 22
<211> 94
<212> PRT
<213> Ancylostoma ceylanicum

<400> 22

Met Arg Thr Leu Tyr Leu Ile Ser Ile Trp Leu Phe Leu Ile Ser Gln
1 5 10 15
Cys Asn Gly Lys Ala Phe Pro Lys Cys Asp Val Asn Glu Arg Phe Glu
20 25 30
Val Cys Gly Asn Leu Lys Glu Cys Glu Leu Lys Cys Asp Glu Asp Pro
35 40 45
Lys Ile Cys Ser Arg Ala Cys Ile Arg Pro Pro Ala Cys Val Cys Asp
50 55 60
Asp Gly Phe Tyr Arg Asp Lys Tyr Gly Phe Cys Val Glu Glu Asp Glu
65 70 75 80
Cys Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr Lys
85 90

<210> 23
<211> 96
<212> PRT
<213> Ancylostoma ceylanicum

<400> 23

Met Ser Thr Leu Tyr Val Ile Ala Ile Cys Leu Leu Leu Val Ser Gln
1 5 10 15
Cys Asn Gly Arg Thr Val Lys Lys Cys Gly Lys Asn Glu Arg Tyr Asp
20 25 30
Asp Cys Gly Asn Ala Lys Asp Cys Glu Thr Lys Cys Gly Glu Glu Glu
35 40 45
Lys Val Cys Arg Ser Arg Glu Cys Thr Ser Pro Gly Ala Cys Val Cys
50 55 60
Glu Gln Gly Phe Tyr Arg Asp Pro Ala Gly Asp Cys Val Thr Asp Glu
65 70 75 80
Glu Cys Asp Glu Trp Asn Asn Met Glu Ile Ile Thr Met Pro Lys Gln
85 90 95

<210> 24
<211> 108
<212> PRT
<213> Ancylostoma ceylanicum

<400> 24

Met Ala Val Leu Tyr Ser Val Ala Ile Ala Leu Leu Leu Val Ser Gln
1 5 10 15
Cys Ser Gly Lys Pro Asn Asn Val Met Thr Asn Ala Cys Gly Leu Asn
20 25 30
Glu Tyr Phe Ala Glu Cys Gly Asn Met Lys Glu Cys Glu His Arg Cys
35 40 45

Asn Glu Glu Glu Asn Glu Glu Arg Asp Glu Glu Arg Ile Thr Ala Cys
50 55 60
Leu Ile Arg Val Cys Phe Arg Pro Gly Ala Cys Val Cys Lys Asp Gly
65 70 75 80
Phe Tyr Arg Asn Arg Thr Gly Ser Cys Val Glu Glu Asp Asp Cys Glu
85 90 95
Tyr Glu Asn Met Glu Phe Ile Thr Phe Ala Pro Glu
100 105

<210> 25
<211> 82
<212> PRT
<213> *Ancylostoma ceylanicum*

<400> 25

Val Pro Ile Cys Gly Ser Asn Glu Arg Tyr Ser Asp Cys Gly Asn Asp
1 5 10 15
Lys Gln Cys Glu Arg Lys Cys Asn Glu Asp Asp Tyr Glu Lys Gly Asp
20 25 30
Glu Ala Cys Arg Ser His Val Cys Glu Arg Pro Gly Ala Cys Val Cys
35 40 45
Glu Asp Gly Phe Tyr Arg Asn Lys Lys Gly Ser Cys Val Glu Ser Asp
50 55 60
Asp Cys Glu Tyr Asp Asn Met Asp Phe Ile Thr Phe Ala Pro Glu Thr
65 70 75 80
Ser Arg

<210> 26
<211> 75
<212> PRT
<213> *Ancylostoma duodenale*

<400> 26

Lys Cys Pro Thr Asp Glu Trp Phe Asp Trp Cys Gly Thr Tyr Lys His
1 5 10 15
Cys Glu Leu Lys Cys Asp Arg Glu Leu Thr Glu Glu Gln Ala Cys
20 25 30
Leu Ser Arg Val Cys Glu Lys Ser Ala Cys Val Cys Asn Asp Gly Leu
35 40 45
Tyr Arg Asp Lys Phe Gly Asn Cys Val Glu Lys Asp Glu Cys Asn Asp
50 55 60
Met Glu Ile Ile Thr Phe Ala Pro Glu Thr Lys
65 70 75

<210> 27
<211> 102
<212> PRT
<213> Ancylostoma duodenale

<400> 27

Met Arg Met Leu Tyr Leu Val Pro Ile Trp Leu Leu Ile Ser Leu
1 5 10 15
Cys Ser Gly Lys Ala Ala Lys Lys Cys Gly Leu Asn Glu Arg Leu Asp
20 25 30
Cys Gly Asn Leu Lys Gln Cys Glu Pro Lys Cys Ser Asp Leu Glu Ser
35 40 45
Glu Glu Tyr Glu Glu Asp Glu Ser Lys Cys Arg Ser Arg Glu Cys
50 55 60
Ser Arg Arg Val Cys Val Cys Asp Glu Gly Phe Tyr Arg Asn Lys Lys
65 70 75 80
Gly Lys Cys Val Ala Lys Asp Val Cys Glu Asp Asp Asn Met Glu Ile
85 90 95
Ile Thr Phe Pro Pro Glu
100

<210> 28
<211> 78
<212> PRT
<213> Ancylostoma duodenale

<400> 28

Asp Glu Cys Gly Pro Asp Glu Trp Phe Asp Tyr Cys Gly Asn Tyr Lys
1 5 10 15
Lys Cys Glu Arg Lys Cys Ser Glu Glu Thr Ser Glu Lys Asn Glu Glu
20 25 30
Ala Cys Leu Ser Arg Ala Cys Thr Gly Arg Ala Cys Val Cys Lys Asp
35 40 45
Gly Leu Tyr Arg Asp Asp Phe Gly Asn Cys Val Pro His Asp Glu Cys
50 55 60
Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr Lys His
65 70 75

1
<210> 29
<211> 76
<212> PRT
<213> *Helogmosomoides polygyrus*

<400> 29

Met Ile Arg Lys Leu Val Leu Leu Thr Ala Ile Val Thr Val Val Leu
1 5 10 15
Ser Ala Lys Thr Cys Gly Pro Asn Glu Glu Tyr Thr Glu Cys Gly Thr
20 25 30
Pro Cys Glu Pro Lys Cys Asn Glu Pro Met Pro Asp Ile Cys Thr Leu
35 40 45
Asn Cys Ile Val Asn Val Cys Gln Cys Lys Pro Gly Phe Lys Arg Gly
50 55 60
Pro Lys Gly Cys Val Ala Pro Gly Pro Gly Cys Lys
65 70 75

<210> 30
<211> 187
<212> DNA
<213> *Ancylostoma caninum*

<400> 30

ttattcgaaa cgatgttctc tccaattttg tccttgaaa ttattttagc tactttgcaa 60
tctgtcttcg cccagccagt tatctccact accgttggtt ccgctgccga gggttcttg 120
gacaagaggc ctatccgcgg aattcagatc tgaatgcggc cgctcgagac tagtggatcc 180
ttagaca 187

<210> 31
 <211> 495
 <212> DNA
 <213> *Ancylostoma caninum*

<220>
 <221> CDS
 <222> (36) .. (356)

<220>
 <221> misc_feature
 <223> Recombinant cDNA Molecule AcaNAP23

<400> 31

gaattccgcg	gaattccgct	tgctactact	caacg	atg	aag	acg	ctc	tat	att	53						
				Met	Lys	Thr	Leu	Tyr	Ile							
				1				5								
gtc	gct	ata	tgc	tcg	ctc	att	tcg	ctg	tgt	act	53					
Val	Ala	Ile	Cys	Ser	Leu	Leu	Ile	Ser	Leu	Cys	101					
										Gly						
										Lys						
										Pro						
										Ser						
gag	aaa	gaa	tgt	ggt	ccc	cat	gaa	aga	ctc	gac	tgt	ggc	aac	aag	aag	149
Glu	Lys	Glu	Cys	Gly	Pro	His	Glu	Arg	Leu	Asp	Cys	Gly	Asn	Lys	Lys	
cca	tgc	gag	cgc	aag	tgc	aaa	ata	gag	aca	agt	gag	gag	gat	gac	197	
Pro	Cys	Glu	Arg	Lys	Cys	Lys	Ile	Glu	Thr	Ser	Glu	Glu	Asp	Asp		
tac	gaa	gag	gga	acc	gaa	cgt	ttt	cga	tgc	ctc	tta	cgt	gtg	tgt	245	
Tyr	Glu	Glu	Gly	Thr	Glu	Arg	Phe	Arg	Cys	Leu	Arg	Val	Cys	Asp		
cag	cct	tat	gaa	tgc	ata	tgc	gat	gat	gga	tac	tac	aga	aac	aag	aaa	293
Gln	Pro	Tyr	Glu	Cys	Ile	Cys	Asp	Asp	Gly	Tyr	Tyr	Arg	Asn	Lys	Lys	
ggc	gaa	tgt	gtg	act	gat	gat	gta	tgc	cag	gaa	gac	ttt	atg	gag	ttt	341
Gly	Glu	Cys	Val	Thr	Asp	Asp	Val	Cys	Gln	Glu	Asp	Phe	Met	Glu	Phe	
att	act	ttc	gca	cca	taa	acc	aa	at	gac	cc	catt	ctt	cgt	gtat	ca	398
Ile	Thr	Phe	Ala	Pro												
cgtcggtgg	tgacagtctc	ccctacatct	tagtagttt	gctt	gataat	gtata	cata	aa								458
actgtacttt	ctgagataga	ataa	agctct	caactac												495

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<210> 32
<211> 478
<212> DNA
<213> Ancylostoma caninum

<220>
<221> CDS
<222> (24)..(341)

<220>
<221> misc_feature
<223> Recombinant cDNA Molecule AcaNAP24

<400> 32

gaattccgca acg atg aag acg ctc tat att atc gct ata tgc 53
          Met Lys Thr Leu Tyr Ile Ile Ala Ile Cys
          1           5           10
tcg ctc ctc att tcg ttg tgt act gga aga ccg gaa aaa aag tgc ggt 101
Ser Leu Leu Ile Ser Leu Cys Thr Gly Arg Pro Glu Lys Lys Cys Gly
          15          20          25
ccc ggt gaa aga ctc gcc tgt ggc aat aag aag cca tgc gag cgc aag 149
Pro Gly Glu Arg Leu Ala Cys Gly Asn Lys Lys Pro Cys Glu Arg Lys
          30          35          40
tgc aaa ata gag aca agt gag gag gat gac tac cca gag gga acc 197
Cys Lys Ile Glu Thr Ser Glu Glu Asp Asp Tyr Pro Glu Gly Thr
          45          50          55
gaa cgt ttt cga tgc ctc tta cgt gtg tgt gat cag cct tat gaa tgc 245
Glu Arg Phe Arg Cys Leu Leu Arg Val Cys Asp Gln Pro Tyr Glu Cys
          60          65          70
ata tgc gat gat gga tac tac aga aac aag aaa ggc gaa tgt gtg act 293
Ile Cys Asp Asp Gly Tyr Tyr Arg Asn Lys Lys Gly Glu Cys Val Thr
          75          80          85          90
gat gat gta tgc cag gaa gac ttt atg gag ttt att act ttc gca cca 341
Asp Asp Val Cys Gln Glu Asp Phe Met Glu Phe Ile Thr Phe Ala Pro
          95          100          105
taaaccataat aatgaccact ggctccatt cttcgtgacc agcgtcggtg gttgacagtc 401
tccccctgcat ctttagtagtt ttgcttgata atgtatccat aaacagtaact ttctgagata
gaataaaagct ctcaact 461

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<210> 33
<211> 472
<212> DNA
<213> Ancylostoma caninum

<220>
<221> CDS
<222> (21)..(335)

<220>
<221> misc_feature
<223> Recombinant cDNA Molecule AcaNAP25

<400> 33

gaattccgta ctactcaacg atg aag acg ctc tat att atc gct ata tgc 50
          Met Lys Thr Leu Tyr Ile Ile Ala Ile Cys
          1           5           10
tcg ctg ctc ttt tca ctg tgt act gga aga ccg gaa aaa aag tgc ggt 98
Ser Leu Leu Phe Ser Leu Cys Thr Gly Arg Pro Glu Lys Lys Cys Gly
          15          20          25
ccc ggt gaa aga ctc gac tgt gcc aac aag aag cca tgc gag ccc aag 146
Pro Gly Glu Arg Leu Asp Cys Ala Asn Lys Lys Pro Cys Glu Pro Lys
          30          35          40
tgc aaa ata gag aca agt gag gag gat gac gac gta gag gat acc 194
Cys Lys Ile Glu Thr Ser Glu Glu Asp Asp Asp Val Glu Asp Thr
          45          50          55
gat gtg aga tgc ctc gta cgt gtg tgt gaa cgt cct ctt aaa tgc ata 242
Asp Val Arg Cys Leu Val Arg Val Cys Glu Arg Pro Leu Lys Cys Ile
          60          65          70
tgc aag gat gga tac tac aga aac aag aaa ggc gaa tgt gtg act gaT 290
Cys Lys Asp Gly Tyr Tyr Arg Asn Lys Lys Gly Glu Cys Val Thr Asp
          75          80          85          90
gat gta tgc cag gaa gac ttt atg gag ttt att act ttc gca cca taaacc 341
Asp Val Cys Gln Glu Asp Phe Met Glu Phe Ile Thr Phe Ala Pro
          95          100          105
caataatgac cactggctcc cattttcggt gatcagcgtc ggtggttgac agtctcccct 401
gcatcttagt tgctttgctt gataatctat acataaacag tactttctga gatagaataa 461
agctctcaac t 472

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<210> 34
 <211> 487
 <212> DNA
 <213> *Ancylostoma caninum*

<220>
 <221> CDS
 <222> (57) .. (347)

<220>
 <221> misc_feature
 <223> Recombinant cDNA Molecule AcaNAP31, AcaNAP42 and AcaNAP46

<400> 34

gaattccgga	cttactagta	ctcagcgaat	caaatacgac	ttactactac	tcaacg	atg	59									
						Met										
						1										
aag	acg	ctc	tct	gct	atc	cct	ata	atg	ctg	ctc	ctg	gta	tcg	caa	tgc	107
Lys	Thr	Leu	Ser	Ala	Ile	Pro	Ile	Met	Leu	Leu	Leu	Val	Ser	Gln	Cys	
5																
agt	gga	aaa	tca	ctg	tgg	gat	cag	aag	tgt	ggt	gag	aat	gaa	agg	ctc	155
Ser	Gly	Ser	Leu	Trp	Asp	Gln	Lys	Cys	Gly	Glu	Asn	Glu	Arg	Leu		
20																
gac	tgt	gac	aat	cag	aag	gac	tgt	gag	cgc	aag	tgc	gat	gat	aaa	aga	203
Asp	Cys	Gly	Asn	Gln	Lys	Asp	Cys	Glu	Arg	Lys	Cys	Asp	Asp	Lys	Arg	
35																
agt	gaa	gaa	att	atg	cag	gca	tgt	ctc	aca	cgt	caa	tgt	ctt	cct	251	
Ser	Glu	Glu	Ile	Met	Gln	Ala	Cys	Leu	Thr	Arg	Gln	Cys	Leu	Pro		
50																
cct	gtt	tgc	gta	tgt	gaa	gat	gga	ttc	tac	aga	aat	gac	aac	gac	caa	299
Pro	Val	Cys	Val	Cys	Glu	Asp	Gly	Phe	Tyr	Arg	Asn	Asp	Asn	Asp	Gln	
70																
tgt	gtt	gat	gaa	gaa	tgc	aat	atg	gag	ttt	att	act	ttc	gcr	cca	tg	349
Cys	Val	Asp	Glu	Glu	Cys	Asn	Met	Glu	Phe	Ile	Thr	Phe	Ala	Pro		
85																
aagcaaatga	cagccgatgg	tttggactct	cgctacagat	cacagcttta	ctgtttccct											409
tgcatcatag	tagtttgct	agatagtgt	tatattagca	tgattttctg	atagggagaa											469
taaagctttc	caattttc															487

<210> 35
 <211> 477
 <212> DNA
 <213> *Ancylostoma caninum*

<220>
 <221> CDS
 <222> (24) .. (338)

<220>
 <221> misc_feature
 <223> Recombinant cDNA Molecule AcaNAP44

<400> 35

gaattccgcg	gaattccgca	acg	atg	aag	acg	ctc	tat	att	atc	gct	ata	tgc	53			
												Met	Lys			
												Thr	Leu			
												Tyr	Ile			
												Ile	Ala			
												Ile	Cys			
												1	5	10		
tcg	ctc	ctc	att	tcg	ctg	tgt	act	gga	aga	ccg	gaa	aaa	aag	tgc	ggt	101
Ser	Leu	Leu	Ile	Ser	Leu	Cys	Thr	Gly	Arg	Pro	Glu	Lys	Lys	Cys	Gly	
ccc	ggt	gaa	aga	ctc	gac	tgt	gcc	aac	aag	cca	tgc	gag	ccc	aag	149	
Pro	Gly	Glu	Arg	Leu	Asp	Cys	Ala	Asn	Lys	Lys	Pro	Cys	Glu	Pro	Lys	
tgc	aaa	ata	gag	aca	agt	gag	gag	gat	gac	gac	gta	gag	gaa	acc	197	
Cys	Lys	Ile	Glu	Thr	Ser	Glu	Glu	Asp	Asp	Asp	Asp	Val	Glu	Thr		
gat	gtg	aga	tgc	ctc	gta	cgt	gtg	tgt	gaa	cg	cct	ttt	aaa	tgc	ata	245
Asp	Val	Arg	Cys	Leu	Val	Arg	Val	Cys	Glu	Arg	Pro	Leu	Lys	Cys	Ile	
tgc	aag	gat	gga	tac	tac	aga	aac	aag	aaa	ggc	gaa	tgt	gtg	act	gat	293
Cys	Lys	Asp	Gly	Tyr	Tyr	Arg	Asn	Lys	Lys	Gly	Glu	Cys	Val	Thr	Asp	
gat	gta	tgc	cag	gaa	gac	ttt	atg	gag	ttt	att	act	ttc	gca	cca	taaacc	344
Asp	Val	Cys	Gln	Glu	Asp	Phe	Met	Glu	Phe	Ile	Thr	Phe	Ala	Pro		
caataatgac	ca	tggctcc	cattttcgt	gatc	tcgtc	gg	tttgc	404								
gcatcttagt	tg	tttgctt	gataatctat	acataa	acag	tac	tttct	ctga	tttgc	464						
agctctcaac	tac															477

<210> 36
 <211> 686
 <212> DNA
 <213> *Ancylostoma caninum*

<220>
 <221> CDS
 <222> (14) .. (556)

<220>
 <221> misc_feature
 <223> Recombinant cDNA Molecule AcaNAP45

<400> 36

aattccgga	aaa	atg	ctg	atg	ctc	tac	ctt	gtt	cct	atc	tgg	ttg	cta	48		
		Met	Leu	Met	Leu	Tyr	Leu	Val	Pro	Ile	Trp	Leu	Leu			
		1				5					10					
ctc	att	tcg	caa	tgc	agt	gga	aaa	tcc	gcg	aag	aaa	tgt	ggt	ctc	aat	98
Leu	Ile	Ser	Gln	Cys	Ser	Gly	Lys	Ser	Ala	Lys	Lys	Cys	Gly	Leu	Asn	
		15				20					25					
gaa	aaa	ttg	gac	tgt	ggc	aat	ctg	aag	gca	tgc	gag	aaa	aag	tgc	agc	146
Glu	Lys	Leu	Asp	Cys	Gly	Asn	Leu	Lys	Ala	Cys	Glu	Lys	Cys	Lys	Cys	
		30				35					40					
gac	ttg	gac	aat	gag	gag	gat	tat	aag	gag	gaa	gat	gag	tgc	aaa	tgc	194
Asp	Leu	Asp	Asn	Glu	Glu	Asp	Tyr	Lys	Glu	Glu	Asp	Glu	Ser	Lys	Cys	
		45				50					55		60			
cga	tca	cgt	gaa	tgt	agt	cgt	cgt	gtt	tgt	gta	tgc	gat	gaa	gga	ttc	242
Arg	Ser	Arg	Glu	Cys	Ser	Arg	Arg	Val	Cys	Val	Cys	Asp	Glu	Gly	Phe	
		65				70					75					
tac	aga	aac	aag	ggc	caa	tgt	gtg	aca	aga	gat	gat	tgc	gag	tat	290	
Tyr	Arg	Asn	Lys	Gly	Gln	Cys	Val	Thr	Arg	Asp	Asp	Cys	Glu	Tyr		
		80				85					90					
gac	aat	atg	gag	att	atc	act	ttt	cca	cca	gaa	gat	aaa	tgt	ggt	ccc	338
Asp	Asn	Met	Glu	Ile	Ile	Thr	Phe	Pro	Pro	Glu	Asp	Lys	Cys	Gly	Pro	
		95				100					105					
gat	gaa	tgg	tgc	gac	tgg	tgt	gga	act	tac	aag	cag	tgt	gag	cgc	aag	386
Asp	Glu	Trp	Phe	Asp	Trp	Cys	Gly	Thr	Tyr	Lys	Gln	Cys	Glu	Arg	Lys	
		110				115					120					
tgc	aat	aag	gag	cta	agt	gag	aaa	gat	gaa	gag	gca	tgc	ctc	tca	cgt	434
Cys	Asn	Lys	Glu	Leu	Ser	Glu	Lys	Asp	Glu	Glu	Ala	Cys	Leu	Ser	Arg	
		125				130					135		140			
gct	tgt	act	ggt	gct	tgt	gtt	tgc	aac	gac	gga	ctg	tac	aga	gac	482	
Ala	Cys	Thr	Gly	Arg	Ala	Cys	Val	Cys	Asn	Asp	Gly	Leu	Tyr	Arg	Asp	
		145				150					155					
gat	ttt	ggc	aat	tgt	gtt	gag	aaa	gac	gaa	tgt	aac	gat	atg	gag	att	530
Asp	Phe	Gly	Asn	Cys	Val	Glu	Lys	Asp	Glu	Cys	Asn	Asp	Met	Glu	Ile	
		160				165					170					
atc	act	ttt	cca	ccg	gaa	acc	aaa	cac	tgaccaaagg	ctcttaactct	cgctacat					585
Ile	Thr	Phe	Pro	Pro	Glu	Thr	Lys	His								
		175				180										
aacgtcagtg	cttgaattgc	ccctttacga	gttagtaatt	ttgactaact	ctgtgttaatt											645
gaggattgtc	tactgtatggt	aaaaatgaag	tgttcaatgt	ct												686

<210> 37
<211> 707
<212> DNA
<213> Ancylostoma caninum

<220>
<221> CDS
<222> (34) .. (576)

<220>
<221> misc_feature
<223> Recombinant cDNA Molecule AcaNAP47

<400> 37

gaattccgcg	gaattccggt	tggccgcaga	aaa	atg	ctg	atg	ctc	tac	ctt	gtt		54						
											Met	Leu	Met	Leu	Tyr	Leu	Val	
											1						5	
cct	atc	tgg	ttc	ctg	ctc	att	tcg	caa	tgc	agt	gga	aaa	tcc	gcg	aag			102
Pro	Ile	Trp	Phe	Leu	Leu	Ile	Ser	Gln	Cys	Ser	Gly	Lys	Ser	Ala	Lys			
																	20	
10						15												
aaa	tgt	ggc	ctc	aat	gaa	aaa	ttg	gac	tgt	ggc	aat	ctg	aag	gca	tgc			150
Lys	Cys	Gly	Leu	Asn	Glu	Lys	Leu	Asp	Cys	Gly	Asn	Leu	Lys	Ala	Cys			
						25						30					35	
25																		
gag	aaa	aag	tgc	agc	gac	ttg	gac	aat	gag	gag	gat	tat	ggg	gag	gaa			198
Glu	Lys	Lys	Cys	Ser	Asp	Leu	Asp	Asn	Glu	Glu	Asp	Tyr	Gly	Glu	Glu			
40						45					50						55	
gat	gag	tgc	aaa	tgc	cga	tca	cgt	gaa	tgt	att	ggt	cgt	gtt	tgc	gta			246
Asp	Glu	Ser	Lys	Cys	Arg	Ser	Arg	Glu	Cys	Ile	Gly	Arg	Val	Cys	Val			
						60				65							70	
tgc	gat	gaa	gga	ttc	tac	aga	aac	aag	ggc	caa	tgt	gtg	aca	aga				294
Cys	Asp	Glu	Gly	Phe	Tyr	Arg	Asn	Lys	Lys	Gly	Gln	Cys	Val	Thr	Arg			
						75				80							85	
90																		
gac	gat	tgc	gag	tat	gac	aat	atg	gag	att	atc	act	ttt	cca	cca	gaa			342
Asp	Asp	Cys	Glu	Tyr	Asp	Asn	Met	Glu	Ile	Ile	Thr	Phe	Pro	Pro	Glu			
						90			95			100						
gat	aaa	tgt	ggt	ccc	gat	gaa	tgg	ttc	gac	tgg	tgt	gga	act	tac	aag			390
Asp	Lys	Cys	Gly	Pro	Asp	Glu	Trp	Phe	Asp	Trp	Cys	Gly	Thr	Tyr	Lys			
						105			110			115						
105																		
cag	tgt	gag	cgc	aag	tgc	agt	gag	gag	cta	agt	gag	aaa	aat	gag	gag			438
Gln	Cys	Glu	Arg	Lys	Cys	Ser	Glu	Glu	Leu	Ser	Glu	Lys	Asn	Glu	Glu			
120						125				130							135	
gca	tgc	ctc	tca	cgt	gtc	tgt	act	ggt	cgt	gct	tgc	gtt	tgc	aac	gac			486
Ala	Cys	Leu	Ser	Arg	Ala	Cys	Thr	Gly	Arg	Ala	Cys	Val	Cys	Asn	Asp			
						140			145								150	
140																		
gga	ttg	tat	aga	gac	gat	ttt	ggc	aat	tgt	gtt	gag	aaa	gac	gaa	tgt			534
Gly	Leu	Tyr	Arg	Asp	Asp	Phe	Gly	Asn	Cys	Val	Glu	Lys	Asp	Glu	Cys			
						155			160			165						
155																		
aac	gat	atg	gag	att	atc	act	ttt	cca	ccg	gaa	acc	aaa	cac	tgaccaaagg				586
Asn	Asp	Met	Glu	Ile	Ile	Thr	Phe	Pro	Pro	Glu	Thr	Lys	His					
						170			175			180						
170																		

ctcttagtctc cgctacataa cgtcagtgtc tgaattgtcc ctttacgtgt tagtaatttt 646
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 t 707

<210> 38
 <211> 529
 <212> DNA
 <213> *Ancylostoma caninum*

<220>
 <221> CDS
 <222> (31)..(309)

<220>
 <221> misc_feature
 <223> Recombinant cDNA Molecule AcaNAP48

<400> 38

gaattccgta cgacctacta ctactcaacg atg aag gcg ctc tat gtt atc tct 54
 Met Lys Ala Leu Tyr Val Ile Ser
 1 5

ata acg ttg ctc ctg gta tgg caa tgc agt gca aga aca gcg agg aaa 102
 Ile Thr Leu Leu Val Trp Gln Cys Ser Ala Arg Thr Ala Arg Lys
 10 15 20

ccc cca acg tgt ggt gaa aat gaa agg gtc gaa tgg tgt ggc aag cag 150
 Pro Pro Thr Cys Gly Glu Asn Glu Arg Val Glu Trp Cys Gly Lys Gln
 25 30 35 40

tgc gag atc aca tgt gac gac cca gat aag ata tgc cgc tca ctc gct 198
 Cys Glu Ile Thr Cys Asp Asp Pro Asp Lys Ile Cys Arg Ser Leu Ala
 45 50 55

tgt cct ggt cct cct gct tgc gta tgc gac gac gga tac tac aga gac 246
 Cys Pro Gly Pro Pro Ala Cys Val Cys Asp Asp Gly Tyr Tyr Arg Asp
 60 65 70

acg aac gtt ggc ttg tgt gta caa tat gac gaa tgc aac gat atg gat 294
 Thr Asn Val Gly Leu Cys Val Gln Tyr Asp Glu Cys Asn Asp Met Asp
 75 80 85

att att atg gtt tca tagggttgc tgaagaatcg aacaaccggt gcacaacttc 349
 Ile Ile Met Val Ser
 90

tatgcttgac tatctctctt gcatcatgca agtttagcta gatagtgtat atattagcaa 409
 gacccttgg ggagaatgaa gcttcccaac tatattaaat caataacgtt ttcgcttcat 469
 gtacacgtgc tcagcacatt catabccact cctcacactc catgaaagca gtgaaatgtt 529

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<210> 39
<211> 361
<212> DNA
<213> Necator americanus

<220>
<221> CDS
<222> (16)..(252)

<220>
<221> misc_feature
<223> Recombinant cDNA Molecule NamNAP

<400> 39

gccaaactctt cgaac atg att cga ggc ctc gtt ctt tct ctc ctg ttt      51
      Met Ile Arg Gly Leu Val Leu Leu Ser Leu Leu Phe
      1           5           10
tgc gtc act ttt gca gcg aag aga gat tgt cca gca aat gag gaa tgg      99
Cys Val Thr Phe Ala Ala Lys Arg Asp Cys Pro Ala Asn Glu Glu Trp
      15          20          25
agg gaa tgt ggc act cca tgt gaa cca aaa tgc aat caa ccg atg cca      147
Arg Glu Cys Gly Thr Pro Cys Glu Pro Lys Cys Asn Gln Pro Met Pro
      30          35          40
gat ata tgt act atg aat tgt atc gtc gat gtg tgt caa tgc aag gag      195
Asp Ile Cys Thr Met Asn Cys Ile Val Asp Val Cys Gln Cys Lys Glu
      45          50          55          60
gga tac aag cgt cat gaa acg aag gga tgc tta aag gaa gga tca gct      243
Gly Tyr Lys Arg His Glu Thr Lys Gly Cys Leu Lys Glu Gly Ser Ala
      65          70          75
gat tgt aaa taagttatca gaacgctcgt tttgtcttac attagatggg tgagctgatg      302
Asp Cys Lys

tatctgtcag ataaaactctt tcttctaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa      361

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<210> 40
<211> 77
<212> PRT
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AcaNAP5

<400> 40

Lys	Ala	Tyr	Pro	Glu	Cys	Gly	Glu	Asn	Glu	Trp	Leu	Asp	Asp	Cys	Gly
1				5			10							15	
Thr	Gln	Lys	Pro	Cys	Glu	Ala	Lys	Cys	Asn	Glu	Pro	Pro	Glu	Glu	
							20		25				30		
Glu	Asp	Pro	Ile	Cys	Arg	Ser	Arg	Gly	Cys	Leu	Leu	Pro	Pro	Ala	Cys
	35					40						45			
Val	Cys	Lys	Asp	Gly	Phe	Tyr	Arg	Asp	Thr	Val	Ile	Gly	Asp	Cys	Val
	50					55					60				
Arg	Glu	Glu	Glu	Cys	Asp	Gln	His	Glu	Ile	Ile	His	Val			
65					70					75					

<210> 41
<211> 75
<212> PRT
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AcaNAP6

<400> 41

Lys	Ala	Tyr	Pro	Glu	Cys	Gly	Glu	Asn	Glu	Trp	Leu	Asp	Val	Cys	Gly
1				5			10							15	
Thr	Lys	Lys	Pro	Cys	Glu	Ala	Lys	Cys	Ser	Glu	Glu	Glu	Glu	Asp	
							20		25			30			
Pro	Ile	Cys	Arg	Ser	Phe	Ser	Cys	Pro	Gly	Pro	Ala	Ala	Cys	Val	Cys
	35					40					45				
Glu	Asp	Gly	Phe	Tyr	Arg	Asp	Thr	Val	Ile	Gly	Asp	Cys	Val	Lys	Glu
	50					55				60					
Glu	Glu	Cys	Asp	Gln	His	Glu	Ile	Ile	His	Val					
65						70				75					

<210> 42
<211> 74
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AcaNAP48

<400> 42

Arg Thr Ala Arg Lys Pro Pro Thr Cys Gly Glu Asn Glu Arg Val Glu
1 5 10 15
Trp Cys Gly Lys Gln Cys Glu Ile Thr Cys Asp Asp Pro Asp Lys Ile
20 25 30
Cys Arg Ser Leu Ala Cys Pro Gly Pro Pro Ala Cys Val Cys Asp Asp
35 40 45
Gly Tyr Tyr Arg Asp Thr Asn Val Gly Leu Cys Val Gln Tyr Asp Glu
50 55 60
Cys Asn Asp Met Asp Ile Ile Met Val Ser
65 70

<210> 43
<211> 88
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AcaNAP23

<400> 43

Lys Pro Ser Glu Lys Glu Cys Gly Pro His Glu Arg Leu Asp Cys Gly
1 5 10 15
Asn Lys Lys Pro Cys Glu Arg Lys Cys Lys Ile Glu Thr Ser Glu Glu
20 25 30
Glu Asp Asp Tyr Glu Glu Gly Thr Glu Arg Phe Arg Cys Leu Leu Arg
35 40 45
Val Cys Asp Gln Pro Tyr Glu Cys Ile Cys Asp Asp Gly Tyr Tyr Arg
50 55 60
Asn Lys Lys Gly Glu Cys Val Thr Asp Asp Val Cys Gln Glu Asp Phe
65 70 75 80
Met Glu Phe Ile Thr Phe Ala Pro
85

<210> 44
<211> 87
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AcaNAP24

<400> 44

Arg Pro Glu Lys Lys Cys Gly Pro Gly Glu Arg Leu Ala Cys Gly Asn
1 5 10 15
Lys Lys Pro Cys Glu Arg Lys Cys Lys Ile Glu Thr Ser Glu Glu Glu
20 25 30
Asp Asp Tyr Pro Glu Gly Thr Glu Arg Phe Arg Cys Leu Leu Arg Val
35 40 45
Cys Asp Gln Pro Tyr Glu Cys Ile Cys Asp Asp Gly Tyr Tyr Arg Asn
50 55 60
Lys Lys Gly Glu Cys Val Thr Asp Asp Val Cys Gln Glu Asp Phe Met
65 70 75 80
Glu Phe Ile Thr Phe Ala Pro
85

<210> 45
<211> 86
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AcaNAP25

<400> 45

Arg Pro Glu Lys Lys Cys Gly Pro Gly Glu Arg Leu Asp Cys Ala Asn
1 5 10 15
Lys Lys Pro Cys Glu Pro Lys Cys Lys Ile Glu Thr Ser Glu Glu Glu
20 25 30
Asp Asp Asp Val Glu Asp Thr Asp Val Arg Cys Leu Val Arg Val Cys
35 40 45
Glu Arg Pro Leu Lys Cys Ile Cys Lys Asp Gly Tyr Tyr Arg Asn Lys
50 55 60
Lys Gly Glu Cys Val Thr Asp Asp Val Cys Gln Glu Asp Phe Met Glu
65 70 75 80
Phe Ile Thr Phe Ala Pro
85

<210> 46
<211> 86
<212> PRT
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AcaNAP44

<400> 46

Arg Pro Glu Lys Cys Gly Pro Gly Glu Arg Leu Asp Cys Ala Asn
1 5 10 15
Lys Lys Pro Cys Glu Pro Lys Cys Lys Ile Glu Thr Ser Glu Glu Glu
20 25 30
Asp Asp Asp Val Glu Glu Thr Asp Val Arg Cys Leu Val Arg Val Cys
35 40 45
Glu Arg Pro Leu Lys Cys Ile Cys Lys Asp Gly Tyr Tyr Arg Asn Lys
50 55 60
Lys Gly Glu Cys Val Thr Asp Asp Val Cys Gln Glu Asp Phe Met Glu
65 70 75 80
Phe Ile Thr Phe Ala Pro
85

<210> 47
<211> 78
<212> PRT
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AcaNAP 31, 42 and 46

<400> 47

Lys Ser Leu Trp Asp Gln Lys Cys Gly Glu Asn Glu Arg Leu Asp Cys
1 5 10 15
Gly Asn Gln Lys Asp Cys Glu Arg Lys Cys Asp Asp Lys Arg Ser Glu
20 25 30
Glu Glu Ile Met Gln Ala Cys Leu Thr Arg Gln Cys Leu Pro Pro Val
35 40 45
Cys Val Cys Glu Asp Gly Phe Tyr Arg Asn Asp Asn Asp Gln Cys Val
50 55 60
Asp Glu Glu Glu Cys Asn Met Glu Phe Ile Thr Phe Ala Pro
65 70 75

<210> 48
<211> 89
<212> PRT
<213> Ancylostoma ceylanicum

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AceNAP4d1

<400> 48

Lys Pro Asn Asn Val Met Thr Asn Ala Cys Gly Leu Asn Glu Tyr Phe
1 5 10 15
Ala Glu Cys Gly Asn Met Lys Glu Cys Glu His Arg Cys Asn Glu Glu
20 25 30
Glu Asn Glu Glu Arg Asp Glu Glu Arg Ile Thr Ala Cys Leu Ile Arg
35 40 45
Val Cys Phe Arg Pro Gly Ala Cys Val Cys Lys Asp Gly Phe Tyr Arg
50 55 60
Asn Arg Thr Gly Ser Cys Val Glu Glu Asp Asp Cys Glu Tyr Glu Asn
65 70 75 80
Met Glu Phe Ile Thr Phe Ala Pro Glu
85

<210> 49
<211> 82
<212> PRT
<213> Ancylostoma ceylanicum

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AceNAP4d2

<400> 49

Val Pro Ile Cys Gly Ser Asn Glu Arg Tyr Ser Asp Cys Gly Asn Asp
1 5 10 15
Lys Gln Cys Glu Arg Lys Cys Asn Glu Asp Asp Tyr Glu Lys Gly Asp
20 25 30
Glu Ala Cys Arg Ser His Val Cys Glu Arg Pro Gly Ala Cys Val Cys
35 40 45
Glu Asp Gly Phe Tyr Arg Asn Lys Lys Gly Ser Cys Val Glu Ser Asp
50 55 60
Asp Cys Glu Tyr Asp Asn Met Asp Phe Ile Thr Phe Ala Pro Glu Thr
65 70 75 80
Ser Arg

<210> 50
<211> 84
<212> PRT
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AcaNAP45d1

<400> 50

Lys Ser Ala Lys Lys Cys Gly Leu Asn Glu Lys Leu Asp Cys Gly Asn
1 5 10 15
Leu Lys Ala Cys Glu Lys Lys Cys Ser Asp Leu Asp Asn Glu Glu Asp
20 25 30
Tyr Lys Glu Glu Asp Glu Ser Lys Cys Arg Ser Arg Glu Cys Ser Arg
35 40 45
Arg Val Cys Val Cys Asp Glu Gly Phe Tyr Arg Asn Lys Lys Gly Gln
50 55 60
Cys Val Thr Arg Asp Asp Cys Glu Tyr Asp Asn Met Glu Ile Ile Thr
65 70 75 80
Phe Pro Pro Glu

<210> 51
<211> 84
<212> PRT
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AcaNAP47d1

<400> 51

Lys Ser Ala Lys Lys Cys Gly Leu Asn Glu Lys Leu Asp Cys Gly Asn
1 5 10 15
Leu Lys Ala Cys Glu Lys Lys Cys Ser Asp Leu Asp Asn Glu Glu Asp
20 25 30
Tyr Gly Glu Glu Asp Glu Ser Lys Cys Arg Ser Arg Glu Cys Ile Gly
35 40 45
Arg Val Cys Val Cys Asp Glu Gly Phe Tyr Arg Asn Lys Lys Gly Gln
50 55 60
Cys Val Thr Arg Asp Asp Cys Glu Tyr Asp Asn Met Glu Ile Ile Thr
65 70 75 80
Phe Pro Pro Glu

<210> 52
<211> 83
<212> PRT
<213> *Ancylostoma duodenale*

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature
AduNAP7d1 and AduNAP4d1

<400> 52

Lys Ala Ala Lys Lys Cys Gly Leu Asn Glu Arg Leu Asp Cys Gly Asn
1 5 10 15
Leu Lys Gln Cys Glu Pro Lys Cys Ser Asp Leu Glu Ser Glu Glu Tyr
20 25 30
Glu Glu Glu Asp Glu Ser Lys Cys Arg Ser Arg Glu Cys Ser Arg Arg
35 40 45
Val Cys Val Cys Asp Glu Gly Phe Tyr Arg Asn Lys Lys Gly Lys Cys
50 55 60
Val Ala Lys Asp Val Cys Glu Asp Asp Asn Met Glu Ile Ile Thr Phe
65 70 75 80
Pro Pro Glu

<210> 53
<211> 78
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223>

<400> 53

Asp Lys Cys Gly Pro Asp Glu Trp Phe Asp Trp Cys Gly Thr Tyr Lys
1 5 10 15
Gln Cys Glu Arg Lys Cys Asn Lys Glu Leu Ser Glu Lys Asp Glu Glu
20 25 30
Ala Cys Leu Ser Arg Ala Cys Thr Gly Arg Ala Cys Val Cys Asn Asp
35 40 45
Gly Leu Tyr Arg Asp Asp Phe Gly Asn Cys Val Glu Lys Asp Glu Cys
50 55 60
Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr Lys His
65 70 75

<210> 54
<211> 78
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AcaNAP47d2

<400> 54

Asp Lys Cys Gly Pro Asp Glu Trp Phe Asp Trp Cys Gly Thr Tyr Lys
1 5 10 15
Gln Cys Glu Arg Lys Cys Ser Glu Glu Leu Ser Glu Lys Asn Glu Glu
20 25 30
Ala Cys Leu Ser Arg Ala Cys Thr Gly Arg Ala Cys Val Cys Asn Asp
35 40 45
Gly Leu Tyr Arg Asp Asp Phe Gly Asn Cys Val Glu Lys Asp Glu Cys
50 55 60
Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr Lys His
65 70 75

<210> 55
<211> 77
<212> PRT
<213> *Ancylostoma duodenale*

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AduNAP4

<400> 55

Lys Cys Pro Thr Asp Glu Trp Phe Asp Trp Cys Gly Thr Tyr Lys His
1 5 10 15
Cys Glu Leu Lys Cys Asp Arg Glu Leu Thr Glu Lys Glu Glu Gln Ala
20 25 30
Cys Leu Ser Arg Val Cys Glu Lys Ser Ala Cys Val Cys Asn Asp Gly
35 40 45
Leu Tyr Arg Asp Lys Phe Gly Asn Cys Val Glu Lys Asp Glu Cys Asn
50 55 60
Asp Met Glu Ile Ile Thr Phe Ala Pro Glu Glu Thr Lys
65 70 75

1
<210> 56
<211> 78
<212> PRT
<213> *Ancylostoma duodenale*

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AduNAP7d2

<400> 56

Asp Glu Cys Gly Pro Asp Glu Trp Phe Asp Tyr Cys Gly Asn Tyr Lys
1 5 10 15
Lys Cys Glu Arg Lys Cys Ser Glu Glu Thr Ser Glu Lys Asn Glu Glu
20 25 30
Ala Cys Leu Ser Arg Ala Cys Thr Gly Arg Ala Cys Val Cys Lys Asp
35 40 45
Gly Leu Tyr Arg Asp Asp Phe Gly Asn Cys Val Pro His Asp Glu Cys
50 55 60
Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr Lys His
65 70 75

2
<210> 57
<211> 75
<212> PRT
<213> *Ancylostoma ceylanicum*

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AceNAP5

<400> 57

Lys Ala Phe Pro Lys Cys Asp Val Asn Glu Arg Phe Glu Val Cys Gly
1 5 10 15
Asn Leu Lys Glu Cys Glu Leu Lys Cys Asp Glu Asp Pro Lys Ile Cys
20 25 30
Ser Arg Ala Cys Ile Arg Pro Pro Ala Cys Val Cys Asp Asp Gly Phe
35 40 45
Tyr Arg Asp Lys Tyr Gly Phe Cys Val Glu Glu Asp Glu Cys Asn Asp
50 55 60
Met Glu Ile Ile Thr Phe Pro Pro Glu Thr Lys
65 70 75

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<210> 58
<211> 77
<212> PRT
<213> Ancylostoma ceylanicum

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AceNAP7

<400> 58

Arg Thr Val Lys Lys Cys Gly Lys Asn Glu Arg Tyr Asp Asp Cys Gly
 1           5           10           15
Asn Ala Lys Asp Cys Glu Thr Lys Cys Gly Glu Glu Lys Val Cys
 20          25          30
Arg Ser Arg Glu Cys Thr Ser Pro Gly Ala Cys Val Cys Glu Gln Gly
 35          40          45
Phe Tyr Arg Asp Pro Ala Gly Asp Cys Val Thr Asp Glu Glu Cys Asp
 50          55          60
Glu Trp Asn Asn Met Glu Ile Ile Thr Met Pro Lys Gln
 65          70          75

<210> 59
<211> 84
<212> PRT
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature AcaNAP2

<400> 59

Lys Ala Thr Met Gln Cys Gly Glu Asn Glu Lys Tyr Asp Ser Cys Gly
 1           5           10           15
Ser Lys Glu Cys Asp Lys Lys Cys Lys Tyr Asp Gly Val Glu Glu
 20          25          30
Asp Asp Glu Glu Pro Asn Val Pro Cys Leu Val Arg Val Cys His Gln
 35          40          45
Asp Cys Val Cys Glu Glu Gly Phe Tyr Arg Asn Lys Asp Asp Lys Cys
 50          55          60
Val Ser Ala Glu Asp Cys Glu Leu Asp Asn Met Asp Phe Ile Tyr Pro
 65          70          75          80
Gly Thr Arg Asn

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<210> 60
<211> 58
<212> PRT
<213> *Heligmosomoides polygyrus*
<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature HpoNAP5

<400> 60

Lys Thr Cys Gly Pro Asn Glu Glu Tyr Thr Glu Cys Gly Thr Pro Cys
1 5 10 15
Glu Pro Lys Cys Asn Glu Pro Met Pro Asp Ile Cys Thr Leu Asn Cys
20 25 30
Ile Val Asn Val Cys Gln Cys Lys Pro Gly Phe Lys Arg Gly Pro Lys
35 40 45
Gly Cys Val Ala Pro Gly Pro Gly Cys Lys
50 55

<210> 61
<211> 61
<212> PRT
<213> *Necator americanus*

<220>
<221> misc_feature
<223> Alignment of amino acid sequences to mature NamNAP

<400> 61

Lys Arg Asp Cys Pro Ala Asn Glu Glu Trp Arg Glu Cys Gly Thr Pro
1 5 10 15
Cys Glu Pro Lys Cys Asn Gln Pro Met Pro Asp Ile Cys Thr Met Asn
20 25 30
Cys Ile Val Asp Val Cys Gln Cys Lys Glu Gly Tyr Lys Arg His Glu
35 40 45
Thr Lys Gly Cys Leu Lys Glu Gly Ser Ala Asp Cys Lys
50 55 60

<210> 62
<211> 171
<212> PRT
<213> *Ancylostoma ceylanicum*

<400> 62

Lys Pro Asn Asn Val Met Thr Asn Ala Cys Gly Leu Asn Glu Tyr Phe
1 5 10 15
Ala Glu Cys Gly Asn Met Lys Glu Cys Glu His Arg Cys Asn Glu Glu
20 25 30
Glu Asn Glu Glu Arg Asp Glu Glu Arg Ile Thr Ala Cys Leu Ile Arg
35 40 45

Val Cys Phe Arg Pro Gly Ala Cys Val Cys Lys Asp Gly Phe Tyr Arg
 50 55 60
 Asn Arg Thr Gly Ser Cys Val Glu Glu Asp Asp Cys Glu Tyr Glu Asn
 65 70 75 80
 Met Glu Phe Ile Thr Phe Ala Pro Glu Val Pro Ile Cys Gly Ser Asn
 85 90 95
 Glu Arg Tyr Ser Asp Cys Gly Asn Asp Lys Gln Cys Glu Arg Lys Cys
 100 105 110
 Asn Glu Asp Asp Tyr Glu Lys Gly Asp Glu Ala Cys Arg Ser His Val
 115 120 125
 Cys Glu Arg Pro Gly Ala Cys Val Cys Glu Asp Gly Phe Tyr Arg Asn
 130 135 140
 Lys Lys Gly Ser Cys Val Glu Ser Asp Asp Cys Glu Tyr Asp Asn Met
 145 150 155 160
 Asp Phe Ile Thr Phe Ala Pro Glu Thr Ser Arg
 165 170

<210> 63
 <211> 162
 <212> PRT
 <213> *Ancylostoma caninum*

<400> 63

Lys Ser Ala Lys Lys Cys Gly Leu Asn Glu Lys Leu Asp Cys Gly Asn
 1 5 10 15
 Leu Lys Ala Cys Glu Lys Lys Cys Ser Asp Leu Asp Asn Glu Glu Asp
 20 25 30
 Tyr Lys Glu Glu Asp Glu Ser Lys Cys Arg Ser Arg Glu Cys Ser Arg
 35 40 45
 Arg Val Cys Val Cys Asp Glu Gly Phe Tyr Arg Asn Lys Lys Gly Gln
 50 55 60
 Cys Val Thr Arg Asp Asp Cys Glu Tyr Asp Asn Met Glu Ile Ile Thr
 65 70 75 80
 Phe Pro Pro Glu Asp Lys Cys Gly Pro Asp Glu Trp Phe Asp Trp Cys
 85 90 95
 Gly Thr Tyr Lys Gln Cys Glu Arg Lys Cys Asn Lys Glu Leu Ser Glu
 100 105 110
 Lys Asp Glu Glu Ala Cys Leu Ser Arg Ala Cys Thr Gly Arg Ala Cys
 115 120 125
 Val Cys Asn Asp Gly Leu Tyr Arg Asp Asp Phe Gly Asn Cys Val Glu
 130 135 140
 Lys Asp Glu Cys Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr
 145 150 155 160
 Lys His

<210> 64
<211> 162
<212> PRT
<213> *Ancylostoma caninum*

<400> 64

Lys Ser Ala Lys Lys Cys Gly Leu Asn Glu Lys Leu Asp Cys Gly Asn
1 5 10 15
Leu Lys Ala Cys Glu Lys Lys Cys Ser Asp Leu Asp Asn Glu Glu Asp
20 25 30
Tyr Gly Glu Glu Asp Glu Ser Lys Cys Arg Ser Arg Glu Cys Ile Gly
35 40 45
Arg Val Cys Val Cys Asp Glu Gly Phe Tyr Arg Asn Lys Lys Gly Gln
50 55 60
Cys Val Thr Arg Asp Asp Cys Glu Tyr Asp Asn Met Glu Ile Ile Thr
65 70 75 80
Phe Pro Pro Glu Asp Lys Cys Gly Pro Asp Glu Trp Phe Asp Trp Cys
85 90 95
Gly Thr Tyr Lys Gln Cys Glu Arg Lys Cys Ser Glu Glu Leu Ser Glu
100 105 110
Lys Asn Glu Ala Cys Leu Ser Arg Ala Cys Thr Gly Arg Ala Cys
115 120 125
Val Cys Asn Asp Gly Leu Tyr Arg Asp Asp Phe Gly Asn Cys Val Glu
130 135 140
Lys Asp Glu Cys Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr
145 150 155 160
Lys His

<210> 65
<211> 161
<212> PRT
<213> *Ancylostoma duodenale*

<400> 65

Lys Ala Ala Lys Lys Cys Gly Leu Asn Glu Arg Leu Asp Cys Gly Asn
1 5 10 15
Leu Lys Gln Cys Glu Pro Lys Cys Ser Asp Leu Glu Ser Glu Glu Tyr
20 25 30
Glu Glu Glu Asp Glu Ser Lys Cys Arg Ser Arg Glu Cys Ser Arg Arg
35 40 45
Val Cys Val Cys Asp Glu Gly Phe Tyr Arg Asn Lys Lys Gly Lys Cys
50 55 60
Val Ala Lys Asp Val Cys Glu Asp Asp Asn Met Glu Ile Ile Thr Phe
65 70 75 80
Pro Pro Glu Asp Glu Cys Gly Pro Asp Glu Trp Phe Asp Tyr Cys Gly
85 90 95

Asn Tyr Lys Lys Cys Glu Arg Lys Cys Ser Glu Glu Thr Ser Glu Lys
100 105 110
Asn Glu Glu Ala Cys Leu Ser Arg Ala Cys Thr Gly Arg Ala Cys Val
115 120 125
Cys Lys Asp Gly Leu Tyr Arg Asp Asp Phe Gly Asn Cys Val Pro His
130 135 140
Asp Glu Cys Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr Lys
145 150 155 160
His

<210> 66

<211> 9

<212> PRT

<213> Ancylostoma caninum

<220>

<221> misc_feature

<223> Xaa in locations 2 to 9 is any amino acid

<400> 66

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

<210> 67

<211> 9

<212> PRT

<213> Ancylostoma caninum

<220>

<221> misc_feature

<223> Xaa in locations 2 to 9 is any amino acid

<400> 67

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

<210> 68

<211> 7

<212> PRT

<213> Ancylostoma caninum

<220>

<221> misc_feature

<223> Xaa in locations 1 and 2 is any amino acid, provided that at least one of Xaa at locations 1 and 2 is Glu or Asp, Xaa in locations 3 to 8 is any amino acid

<400> 68

Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

<210> 69
<211> 5
<212> PRT
<213> Ancylostoma caninum

<400> 69

Gly Phe Tyr Arg Asp
1 5

<210> 70
<211> 5
<212> PRT
<213> Ancylostoma caninum

<400> 70

Gly Phe Tyr Arg Asn
1 5

<210> 71
<211> 5
<212> PRT
<213> Ancylostoma caninum

<400> 71

Gly Tyr Tyr Arg Asp
1 5

<210> 72
<211> 5
<212> PRT
<213> Ancylostoma caninum

<400> 72

Gly Try Tyr Arg Asn
1 5

◀ <210> 73
<211> 5
<212> PRT
<213> Ancylostoma caninum

<400> 73

Gly Leu Tyr Arg Asp
1 5

<210> 74
<211> 5
<212> PRT
<213> Ancylostoma caninum

<400> 74

Glu Ile Ile His Val
1 5

<210> 75
<211> 5
<212> PRT
<213> Ancylostoma caninum

<400> 75

Asp Ile Ile Met Val
1 5

<210> 76
<211> 6
<212> PRT
<213> Ancylostoma caninum

<400> 76

Phe Ile Thr Phe Ala Pro
1 5

>
<210> 77
<211> 5
<212> PRT
<213> Ancylostoma caninum

<400> 77

Met Glu Ile Ile Thr
1 5

<210> 78
<211> 7
<212> PRT
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Xaa in locations 1 and 2 is any amino acid, provided that at least one Xaa is Glu or Asp

<400> 78

Xaa Xaa Gly Phe Tyr Arg Asp
1 5

<210> 79
<211> 7
<212> PRT
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Xaa in locations 1 and 2 is any amino acid, provided that at least one Xaa is Glu or Asp

<400> 79

Xaa Xaa Gly Phe Tyr Arg Asn
1 5

`

<210> 80
<211> 7
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223> Xaa in locations 1 and 2 is any amino acid, provided that at least one Xaa is Glu or Asp

<400> 80
Xaa Xaa Gly Tyr Tyr Arg Asp
1 5

<210> 81
<211> 7
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223> Xaa in locations 1 and 2 is any amino acid, provided that at least one Xaa is Glu or Asp

<400> 81
Xaa Xaa Gly Tyr Tyr Arg Asn
1 5

<210> 82
<211> 7
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223> Xaa in locations 1 and 2 is any amino acid, provided that at least one Xaa is Glu or Asp

<400> 82
Xaa Xaa Gly Leu Tyr Arg Asp
1 5

<210> 83
<211> 9
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223> Xaa in locations 2 to 9 is any amino acid

<400> 83

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

<210> 84
<211> 4
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223> Xaa in locations 1 is any amino acid, preferably Leu; Xaa in location 2 is any amino acid; Xaa in location 3 is any amino acid, preferably Arg; Xaa in location 4 is any amino acid

<400> 84

Xaa Xaa Xaa Xaa
1

<210> 85
<211> 4
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223> Xaa in locations 1 to 4 is any amino acid

<400> 85

Xaa Xaa Xaa Xaa
1

<210> 86
<211> 9
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223> Xaa in locations 1 to 2 is any amino acid

<400> 86

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

<210> 87
<211> 9
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223> Xaa in locations 1 to 2 is any amino acid

<400> 87

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

<210> 88
<211> 25
<212> DNA
<213> *Ancylostoma caninum*

<400> 88

tcagacatgt ataatctcat gttgg 25

<210> 89
<211> 22
<212> DNA
<213> *Ancylostoma caninum*

<220>
<221> misc-feature
<223> Oligonucleotide primer YG101

<400> 89

aaggcataacc cggagtgtgc tg 22

90
21
DNA
Ancylostoma caninum

90
misc_feature
Xaa in locations 1 to 2 is any amino acid

90

aarccntgyg armggaartg y

21

91
23
DNA
Ancylostoma caninum

misc_feature
"w" stands for a or t; "r" stands for a or g; "n" stands for any base; and "y" stands for c or t.

91

twrwancnt cyttrcanac rca

23

>
<210> 92
<211> 13
<212> PRT
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> N-terminus

<400> 92

Lys Ala Tyr Pro Glu Cys Gly Glu Asn Glu Trp Leu Asp
1 5 10

<210> 93
<211> 11
<212> PRT
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> N-terminus

<400> 93

Lys Ala Tyr Pro Glu Cys Gly Glu Asn Glu Trp
1 5 10

<210> 94
<211> 33
<212> DNA
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> "r" stands for a or g; "n" stands for inosine; "y" stands for c or t

<400> 94

aargcntayc cngartgygg ngaraaygar tgg

33

<210> 95
<211> 28
<212> DNA
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Oligonucleotide primer

<400> 95

aattcgcggc cgctttttt tttttttt

28

<210> 96
<211> 24
<212> DNA
<213> Ancylostoma caninum

<400> 96

ggtgtggcgcacg actcctggag cccg

24

<210> 97
<211> 20
<212> PRT
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> N-terminal fragment

<400> 97

Gys Ala Tyr Pro Glu Cys Gly Glu Asn Glu Tip Leu Asp Asp Cys Gly Thr
1 5 10 15
Gln Lys Pro
20

<210> 98
<211> 10
<212> DNA
<213> *Ancylostoma caninum*

<400> 98

cggaattccg 10

<210> 99
<211> 18
<212> DNA
<213> *Ancylostoma caninum*

<400> 99

tggcctagcg tcaggagt 18

<210> 100
<211> 18
<212> DNA
<213> *Ancylostoma caninum*

<400> 100

cctgacgcta ggccatgg 18

<210> 101
<211> 24
<212> DNA
<213> *Ancylostoma caninum*

<400> 101

agcggataac aatttcacac agga 24

>

<210> 102
<211> 66
<212> DNA
<213> Ancylostoma caninum

<400> 102

atgttctctc caattttgtc cttggaaatt attttagctt tggctacttt gcaatctgtc 60
ttcgct 66

<210> 103
<211> 57
<212> DNA
<213> Ancylostoma caninum

<400> 103

cagccaggta tctccactac cgttggttcc gctgccgagg gttctttgga caagagg 57

<210> 104
<211> 51
<212> DNA
<213> Ancylostoma caninum

<400> 104

cctatccgcg gaattcagat ctgaatgcgg ccgctcgaga ctagtggatc c 51

<210> 105
<211> 41
<212> DNA
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Oligonucleotide primer YG103

<400> 105

gctcgctcta gaagcttcag acatgtataa tctcatgttg g 41

<210> 106
<211> 5
<212> PRT
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Amino-terminous

<400> 106

Lys Ala Tyr Pro Glu
1 5

<210> 107
<211> 36
<212> DNA
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Oligonucleotide primer YG102

<400> 107

gaccagtctta gacaatgaag atgctttacg ctatcg

36

<210> 108
<211> 23
<212> DNA
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Amino-terminous YG60

<400> 108

gtgggagacc tgatactctc aag

23

<210> 109
<211> 9
<212> PRT
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> N-terminal fragment

<400> 109

Arg Thr Val Arg Lys Ala Tyr Pro Glu
1 5

<210> 110
<211> 5
<212> PRT
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> N-terminal fragment

<400> 110

Arg Thr Val Arg Lys
1 5

<210> 111
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Description of Artificial Sequence: pDONG vector amplified PCR primer fragment

<400> 111

atccgaagct ttgcttaacat actgcgtaat aag

33

<210> 112
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Description of Artificial Sequence: pDONG vector amplified PCR primer fragment

<400> 112

tatggatgg ccgacttggc ctccgcctga gcctccacct ttatccaat ccaaataaga 60

<210> 113
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Description of Artificial Sequence: pDONG vector amplified PCR primer fragment

<400> 113

atggatggc cgacttggcc ctccgcctga gcctccacct ttatccaat ccaaataaga 60

<210> 114
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Description of Artificial Sequence: pDONG vector amplified PCR primer fragment

<400> 114

tatggatgg ccgacttggc cgatccgcct gagcctccac ctttatccca atccaaataa 60

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<210> 115
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Description of Artificial Sequence: pDONG vector amplified PCR primer
fragment

<400> 115

aggagggat ccgcggccgc gtgatatggg atggccgact tggcc 45

<210> 116
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Description of Artificial Sequence: pUC119 primer

<400> 116

cgccagggtt ttcccagtca cgac 24

<210> 117
<211> 28
<212> DNA
<213> Ancylostoma caninum

<400> 117

gttgcagtt ccggatata taaagtcc 28

<210> 118
<211> 7
<212> PRT
<213>

<220>
<221> misc_feature
<223> Xaa in location 5 is Arg, Pro or Lys

<400> 118

Lys Pro Cys Glu Xaa Lys Cys
 1           5

```

<210> 119
<211> 8
<212> PRT
<213> Necator americanus

<220>
<221> misc_feature
<223> Xaa in location 2 is Val, Ile or Gln; Xaa in location 4 is Lys, Asp, Glu or Gln; Xaa in location 5 is Asp or Glu; Xaa in location 7 is Phe or Tyr

<400> 119

Cys Xaa Cys Xaa Xaa Gly Xaa Tyr
1 5

<210> 120
<211> 44
<212> DNA
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Oligonucleotide primer

<400> 120

gaccagtctta gaccaccatg gcggtgcttt attcagtagc aata

44

<210> 121
<211> 40
<212> DNA
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Oligonucleotide primer

<400> 121

gctcgctctta gattatcgtg aggtttctgg tgcaaaaagtg

40

<210> 122
<211> 24
<212> DNA
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223> Oligonucleotide primer

<400> 122

aaagcaacga tgcagtgtgg tgag 24

<210> 123
<211> 47
<212> DNA
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223> Oligonucleotide primer

<400> 123

gctcgctcta gaagcttcag tttcgagttc cgggatataa aaagtcc 47

<210> 124
<211> 30
<212> DNA
<213> *Ancylostoma caninum*

<220>
<221> misc_feature
<223> Oligonucleotide primer

<400> 124

gagactttta aatcactgtc ggatcagaag 30

<210> 125
<211> 33
<212> DNA
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Oligonucleotide primer

<400> 125

ttcaggacta gttcatggtg cgaaagtaat aaa 33

<210> 126
<211> 28
<212> DNA
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Oligonucleotide primer

<400> 126

gcgtttaaag caacgatgca gtgtggtg 28

<210> 127
<211> 46
<212> DNA
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Oligonucleotide primer

<400> 127

cgctctagaa gttcatggg tttcgagttc cogatataat aaagtc 46

<210> 128
<211> 91
<212> PRT
<213> Ancylostoma caninum

<220>
<221> misc_feature
<223> Alignment of AcaNAPc2

<400> 128

Leu Val Sar Tyr Cys Ser Gly Lys Ala Thr Met Gln Cys Gly Glu Asn
1 5 10 15

Glu Lys Tyr Asp Ser Cys Gly Ser Lys Glu Cys Asp Lys Cys Lys
20 25 30

Tyr Asp Gly Val Glu Glu Asp Asp Glu Glu Pro Asn Val Pro Cys
35 40 45

Leu Val Arg Val Cys His Gln Asp Cys Val Cys Glu Gly Phe Tyr
50 55 60

Arg Asn Lys Asp Asp Lys Cys Val Ser Ala Glu Asp Cys Glu Leu Asp
65 70 75 80

Asn Met Asp Phe Ile Tyr Pro Gly Thr Arg Asn
85 90

<210> 129
<211> 8
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 to 8 is any amino acid

<400> 129

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

<210> 130
<211> 7
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 to 6 is any amino acid

<400> 130

Cys Xaa Xaa Xaa Xaa Xaa Cys
1 5

<210> 131
<211> 6
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in location 2 to 5 is any amino acid

<400> 131

Cys Xaa Xaa Xaa Xaa Xaa Cys
1 5

<210> 132
<211> 5
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 to 4 is any amino acid

<400> 132

Cys Xaa Xaa Xaa Xaa Cys
1 5

<210> 133
<211> 4
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> Internal fragment
<223> Xaa in locations 2 and 3 is any amino acid

<400> 133

Cys Xaa Xaa Cys
1

<210> 134
<211> 21
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> Internal fragment
<223> Xaa in locations 1 to 3 and 5 to 21 is any amino acid

<400> 134

Xaa Xaa Xaa Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

<210> 135
<211> 20
<212> PRT
<213> *Ancylostoma caninum*

<220>
<221> Internal fragment
<223> Xaa in locations 1 to 3 and 5 to 20 is any amino acid

<400> 135

Xaa Xaa Xaa Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa
20

<210> 136

<211> 19

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and 5 to 19 is any amino acid

<400> 136

Xaa Xaa Xaa Cys Xaa
1 5 10 15

Xaa Xaa Xaa

<210> 137

<211> 18

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and 5 to 18 is any amino acid

<400> 137

Xaa Xaa Xaa Cys Xaa
1 5 10 15

Xaa Xaa

<210> 138

<211> 17

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and 5 to 17 is any amino acid

<400> 138

Xaa Xaa Xaa Cys Xaa
1 5 10 15

Xaa

<210> 139

<211> 16

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and 5 to 16 is any amino acid

<400> 139

Xaa Xaa Xaa Cys Xaa
1 5 10 15

<210> 140

<211> 15

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and 5 to 15 is any amino acid

<400> 140

Xaa Xaa Xaa Cys Xaa
1 5 10 15

<210> 141

<211> 14

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and 5 to 14 is any amino acid

<400> 141

Xaa Xaa Xaa Cys Xaa
1 5 10

<210> 142

<211> 13

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and 5 to 13 is any amino acid

<400> 142

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa

1

5

10

<210> 143

<211> 12

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and 5 to 12 is any amino acid

<400> 143

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa

1

5

10

<210> 144

<211> 11

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and 5 to 11 is any amino acid

<400> 144

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa

1

5

10

<210> 145
<211> 10
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 1 to 3 and 5 to 10 is any amino acid

<400> 145

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10

<210> 146
<211> 5
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 to 5 is any amino acid

<400> 146

Cys Xaa Xaa Xaa Xaa
1 5

<210> 147
<211> 4
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 to 4 is any amino acid

<400> 147

Cys Xaa Xaa Xaa
1

<210> 148
<211> 6
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 to 6 is any amino acid

<400> 148

Cys Xaa Xaa Xaa Xaa
1 5

<210> 149
<211> 5
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 to 5 is any amino acid

<400> 149

Cys Xaa Xaa Xaa Xaa
1 5

<210> 150
<211> 4
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 to 4 is any amino acid

<400> 150

Cys Xaa Xaa Xaa
1

<210> 151
<211> 15
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 and 4 is any amino acid

<400> 151

Cys Xaa Cys Xaa
1 5 10 15

<210> 152
<211> 14
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 and locations 4 to 14 is any amino acid

<400> 152

Cys Xaa Cys Xaa
1 5 10

<210> 153
<211> 13
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 and locations 4 to 13 is any amino acid

<400> 153

Cys Xaa Cys Xaa
1 5 10

<210> 154
<211> 8
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 and 7 is any amino acid

<400> 154

Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys
1 5

<210> 155
<211> 7
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 to 6 is any amino acid

<400> 155

Cys Xaa Xaa Xaa Xaa Xaa Cys
1 5

<210> 156
<211> 8
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 to 8 is any amino acid

<400> 156

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

<210> 157
<211> 7
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 to 6 is any amino acid

<400> 157

Cys Xaa Xaa Xaa Xaa Xaa Cys
1 5

<210> 158
<211> 6
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 to 5 is any amino acid

<400> 158

Cys Xaa Xaa Xaa Xaa Cys
1 5

<210> 159
<211> 5
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 to 4 is any amino acid

<400> 159

Cys Xaa Xaa Xaa Cys
1 5

<210> 160

<211> 23

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and locations 5 to 23 is any amino acid

<400> 160

Xaa Xaa Xaa Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20

<210> 161

<211> 22

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and locations 5 to 22 is any amino acid

<400> 161

Xaa Xaa Xaa Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa
20

<210> 162

<211> 21

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and locations 5 to 21 is any amino acid

<400> 162

Xaa Xaa Xaa Cys Xaa Xaa

1

5

10

15

Xaa Xaa Xaa Xaa Xaa

20

<210> 163

<211> 20

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and locations 5 to 20 is any amino acid

<400> 163

Xaa Xaa Xaa Cys Xaa Xaa

1

5

10

15

Xaa Xaa Xaa Xaa

20

<210> 164

<211> 19

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and locations 5 to 19 is any amino acid

<400> 164

Xaa Xaa Xaa Cys Xaa Xaa

1

5

10

15

Xaa Xaa Xaa

<210> 165

<211> 18

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and locations 5 to 18 is any amino acid

<400> 165

Xaa Xaa Xaa Cys Xaa Xaa

1

5

10

15

Xaa Xaa

<210> 166

<211> 17

<212> PRT

<213> Ancylostoma caninum

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<400> 166

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Xaa

<210> 167

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<400> 167

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<210> 168

<211> 15

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<211> 14

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<210> 170

<211> 13

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<211> 12

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<211> 11

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<210> 173

<211> 10

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<223> Xaa in locations 1 to 3 and locations 5 to 10 is any amino acid

<400> 173

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<220> Internal fragment
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<400> 176

Cys Xaa Xaa Xaa Xaa Xaa
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<210> 177
<211> 5
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<213> Ancylostoma caninum

<220>
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<223> Internal fragment

<400> 177

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1 5

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<211> 15
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<220>
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<223> Xaa in locations 2 and locations 4 to 15 is any amino acid

<400> 179

Cys Xaa Cys Xaa
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<210> 180

<211> 14

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 2 and locations 4 to 14 is any amino acid

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Cys Xaa Cys Xaa Xaa

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<210> 181

<211> 8

<212> PRT

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<211> 7

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Xaa
20 25

<210> 185
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<220>
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<400> 185

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1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20 25

<210> 186
<211> 24
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<220>
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<400> 186

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20

<210> 187
<211> 23
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<220>
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<400> 187

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1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa
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<400> 188

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1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa
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Xaa Xaa Xaa Xaa Xaa
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<400> 190

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1 5 10 15

Xaa Xaa Xaa Xaa
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<400> 191

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1 5 10 15

Xaa Xaa Xaa

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<400> 192

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1 5 10 15

Xaa Xaa

<210> 193
<211> 17
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<400> 193

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1 5 10 15

Xaa

<210> 194
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<400> 194

Cys Xaa
1 5 10 15

<210> 195

<211> 15

<212> PRT

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<220>

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<223> Xaa in locations 2 to 15 is any amino acid

<400> 195

Cys Xaa
1 5 10 15

<210> 196

<211> 14

<212> PRT

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<220>

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<223> Xaa in locations 2 to 14 is any amino acid

<400> 196

Cys Xaa
1 5 10

<210> 197

<211> 13

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<220>

<221> Internal fragment

<223> Xaa in locations 2 to 13 is any amino acid

<400> 197

Cys Xaa
1 5 10

<210> 198
<211> 12
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<220>
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<223> Xaa in locations 2 to 12 is any amino acid

<400> 198

Cys Xaa
1 5 10

<210> 199
<211> 11
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<220>
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<400> 199

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1 5 10

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<400> 200

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1 5 10

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<400> 201

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<400> 202

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<400> 203

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<400> 204

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<220>
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<400> 205

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<400> 206

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<400> 207

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<210> 208
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<220>
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<400> 208

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<220>
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<400> 209

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1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa
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<211> 22

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<223> Xaa in locations 1 to 3 and locations 5 to 22 is any amino acid

<400> 210

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Xaa Xaa Xaa Xaa Xaa Xaa

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<220>

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<400> 211

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Xaa Xaa Xaa Xaa Xaa

20

<210> 212

<211> 20

<212> PRT

<213> Ancylostoma caninum

<220>

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<223> Xaa in locations 1 to 3 and locations 5 to 20 is any amino acid

<400> 212

Xaa Xaa Xaa Cys Xaa Xaa

1

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15

Xaa Xaa Xaa Xaa

20

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Xaa Xaa Xaa

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Xaa Xaa

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Xaa

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Xaa Xaa Xaa Cys Xaa Xaa

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<400> 217

Xaa Xaa Xaa Cys Xaa Xaa

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10

15

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<400> 218

Xaa Xaa Xaa Cys Xaa Xaa

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<400> 220

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<400> 221

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<211> 10

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<400> 222

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa

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<210> 223

<211> 5

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<400> 223

Cys Xaa Xaa Xaa Xaa

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<210> 224

<211> 4

<212> PRT

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<223> Xaa in locations 2 to 4 is any amino acid

<400> 224

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<211> 6
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<223> Xaa in locations 2 to 6 is any amino acid

<400> 225

Cys Xaa Xaa Xaa Xaa Xaa
1 5

<210> 226
<211> 5
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<400> 226

Cys Xaa Xaa Xaa Xaa
1 5

<210> 227
<211> 4
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<220>
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<400> 227

Cys Xaa Xaa Xaa
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<210> 228

<211> 15

<212> PRT

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<220>

<221> Internal fragment

<223> Xaa in location 2 and locations 4 to 15 is any amino acid

<400> 228

Cys Xaa Cys Xaa Xaa

1

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10

15

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<211> 14

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<220>

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<223> Xaa in location 2 and locations 4 to 14 is any amino acid

<400> 229

Cys Xaa Cys Xaa Xaa

1

5

10

<210> 230

<211> 8

<212> PRT

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<220>

<221> Internal fragment

<223> Xaa in location 2 to 8 is any amino acid

<400> 230

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa

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5

<210> 231
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<220>
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<400> 231

Cys Xaa Xaa Xaa Xaa Xaa Xaa
1 5

<210> 232
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<400> 232

Cys Xaa Xaa Xaa Xaa Xaa
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<210> 233
<211> 26
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<400> 233

Cys Xaa
1 5 10 15

Xaa
20 25

<210> 234
<211> 25
<212> PRT
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<400> 234

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20 25

<210> 235
<211> 24
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<220>
<221> Internal fragmen
<223> Xaa in location 2 to 24 is any amino acid t

<400> 235

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20

<210> 236
<211> 23
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<213> Ancylostoma caninum

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<223> Xaa in location 2 to 23 is any amino acid

<400> 236

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20

<210> 237
<211> 22
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<400> 237

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa
20

<210> 238
<211> 21
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Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

<210> 239
<211> 20
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Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa
20

<210> 240
<211> 19
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<400> 240

Cys Xaa
1 5 10 15

Xaa Xaa Xaa

<210> 241
<211> 18
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<400> 241

Cys Xaa
1 5 10 15

Xaa Xaa

<210> 242
<211> 17
<212> PRT
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<400> 242

Cys Xaa
1 5 10 15

Xaa

<210> 243
<211> 16
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<400> 243

Cys Xaa
1 5 10 15

<210> 244
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<400> 244

Cys Xaa
1 5 10 15

<210> 245
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<400> 245

Cys Xaa
1 5 10

<210> 246
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<400> 246

Cys Xaa
1 5 10

<210> 247
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<400> 247

Cys Xaa
1 5 10

<210> 248
<211> 11
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<223> Xaa in locations 2 to 11 is any amino acid

<400> 248

Cys Xaa
1 5 10

<210> 249
<211> 10
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<400> 249

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10

<210> 250
<211> 9
<212> PRT
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<223> Xaa in locations 2 to 9 is any amino acid

<400> 250

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

<210> 251
<211> 8
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
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<400> 251

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

<210> 252
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<220>
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<400> 252

Cys Xaa Xaa Xaa Xaa Xaa Xaa
1 5

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<400> 253

Cys Xaa Xaa Xaa Xaa Xaa
1 5

<210> 254
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<220>
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<400> 254

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

<210> 255
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<212> PRT
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<220>
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<400> 255

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1 5

<210> 256
<211> 6
<212> PRT
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<400> 256

Cys Xaa Xaa Xaa Xaa Cys
1 5

<210> 257
<211> 5
<212> PRT
<213> Ancylostoma caninum

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<223> Xaa in locations 2 to 4 is any amino acid

<400> 257

Cys Xaa Xaa Xaa Cys
1 5

<210> 258

<211> 23

<212> PRT

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Xaa Xaa Xaa Xaa Xaa Xaa Xaa

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<400> 259

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Xaa Xaa Xaa Xaa Xaa Xaa

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Xaa Xaa Xaa Xaa Xaa

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<400> 261

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Xaa Xaa Xaa Xaa
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<211> 19

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<400> 262

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1 5 10 15

Xaa Xaa Xaa

<210> 263

<211> 18

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<223> Xaa in locations 1 to 3 and locations 5 to 18 is any amino acid

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Xaa Xaa

<210> 264

<211> 17

<212> PRT

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<223> Xaa in locations 1 to 3 and locations 5 to 17 is any amino acid

<400> 264

Xaa Xaa Xaa Cys Xaa Xaa

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Xaa

<210> 265

<211> 16

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<400> 265

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<210> 266

<211> 15

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<220>

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<400> 266

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<210> 267

<211> 14

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<220>

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<211> 13

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<210> 269

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<211> 11

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<211> 10

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Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa

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<210> 272

<211> 5

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Cys Xaa Xaa Xaa Xaa

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<400> 274

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<400> 277

Cys Xaa Cys Xaa
1 5 10 15

<210> 278
<211> 14
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<220>
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<223> Xaa in locations 2 and locations 4 to 14 is any amino acid

<400> 278

Cys Xaa Cys Xaa
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<210> 279

<211> 13

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 2 and locations 4 to 13 is any amino acid

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<211> 8

<212> PRT

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<211> 7

<212> PRT

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<223> Xaa in locations 2 to 7 is any amino acid

<400> 281

Cys Xaa Xaa Xaa Xaa Xaa Xaa

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5

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<400> 283

Cys Xaa
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Xaa
20 25

<210> 284
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<400> 284

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20 25

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<400> 285

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
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<211> 23
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<220>
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<400> 286

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20

<210> 287
<211> 22
<212> PRT
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<223> Xaa in locations 2 to 22 is any amino acid

<400> 287

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa
20

<210> 288
<211> 21
<212> PRT
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<220>
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<400> 288

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

<210> 289
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<400> 289

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa
20

<210> 290
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<220>
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<400> 290

Cys Xaa
1 5 10 15

Xaa Xaa Xaa

<210> 291
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<400> 291

Cys Xaa
1 5 10 15

Xaa Xaa

<210> 292
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<220>
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<400> 292

Cys Xaa
1 5 10 15

Xaa

<210> 293
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<400> 293

Cys Xaa
1 5 10 15

<210> 294
<211> 15
<212> PRT
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<220>
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<223> Xaa in locations 2 to 15 is any amino acid

<400> 294

Cys Xaa
1 5 10 15

<210> 295
<211> 14
<212> PRT
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<220>
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<223> Xaa in locations 2 to 14 is any amino acid

<400> 295

Cys Xaa
1 5 10

<210> 296
<211> 13
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<223> Xaa in locations 2 to 13 is any amino acid

<400> 296

Cys Xaa
1 5 10

<210> 297
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<223> Xaa in locations 2 to 12 is any amino acid

<400> 297

Cys Xaa
1 5 10

<210> 298
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<223> Xaa in locations 2 to 11 is any amino acid

<400> 298

Cys Xaa
1 5 10

<210> 299
<211> 10
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<220>
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<400> 299

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
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<210> 300
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<400> 300

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1 5

5

<210> 301
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<220>
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<223> Xaa in locations 2 to 8 is any amino acid

<400> 301

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

<210> 302
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<220>
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<400> 302

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<210> 303
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<400> 303

Cys Xaa Xaa Xaa Xaa Xaa
1 5

<210> 304
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<220>
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Cys Xaa Xaa Xaa Xaa
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<210> 305
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<400> 306

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<220>
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<400> 308

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

<210> 309
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<400> 309

Cys Xaa Xaa Xaa Xaa Xaa Cys
1 5

<210> 310
<211> 6
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<220>
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<223> Xaa in locations 2 to 5 is any amino acid

<400> 310

Cys Xaa Xaa Xaa Xaa Cys
1 5

<210> 311
<211> 5
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<223> Xaa in locations 2 to 4 is any amino acid

<400> 311

Cys Xaa Xaa Xaa Cys
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<210> 312
<211> 23
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<400> 312

Xaa Xaa Xaa Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20

<210> 313
<211> 22
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<220>
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<223> Xaa in locations 1 to 3 and locations 5 to 22 is any amino acid

<400> 313

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1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa
20

<210> 314

<211> 21

<212> PRT

<213> Ancylostoma caninum

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<221> Xaa in locations 1 to 3 and locations 5 to 21 is any amino acid

<400> 314

Xaa Xaa Xaa Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

<210> 315

<211> 20

<212> PRT

<213> Ancylostoma caninum

<220>

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<223> Xaa in locations 1 to 3 and locations 5 to 20 is any amino acid

<400> 315

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1 5 10 15

Xaa Xaa Xaa Xaa
20

<210> 316

<211> 19

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<220>

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<223> Xaa in locations 1 to 3 and locations 5 to 19 is any amino acid

<400> 316

Xaa Xaa Xaa Cys Xaa
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Xaa Xaa Xaa

<210> 317

<211> 18

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<223> Xaa in locations 1 to 3 and locations 5 to 18 is any amino acid

<400> 317

Xaa Xaa Xaa Cys Xaa
1 5 10 15

Xaa Xaa

<210> 318

<211> 17

<212> PRT

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<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and locations 5 to 17 is any amino acid

<400> 318

Xaa Xaa Xaa Cys Xaa
1 5 10 15

Xaa

<210> 319

<211> 16

<212> PRT

<213> Ancylostoma caninum

<220>

<221> Internal fragment

<223> Xaa in locations 1 to 3 and locations 5 to 16 is any amino acid

<400> 319

Xaa Xaa Xaa Cys Xaa
1 5 10 15

<210> 320

<211> 15

<212> PRT

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<220>

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<223> Xaa in locations 1 to 3 and locations 5 to 15 is any amino acid

<400> 320

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa

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5

10

15

<210> 321

<211> 14

<212> PRT

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<400> 321

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa

1

5

10

<210> 322

<211> 13

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<400> 322

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa

1

5

10

<210> 323

<211> 12

<212> PRT

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<223> Xaa in locations 1 to 3 and locations 5 to 12 is any amino acid

<400> 323

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa

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5

10

<210> 324

<211> 11

<212> PRT

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<223> Xaa in locations 1 to 3 and locations 5 to 11 is any amino acid

<400> 324

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa

1

5

10

<210> 325

<211> 10

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<223> Xaa in locations 1 to 3 and locations 5 to 10 is any amino acid

<400> 325

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa

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5

10

<210> 326
<211> 5
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<220>
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<223> Xaa in locations 2 to 5 is any amino acid

<400> 326

Cys Xaa Xaa Xaa Xaa
1 5

<210> 327
<211> 4
<212> PRT
<213> Ancylostoma caninum

<220>
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<223> Xaa in locations 2 to 4 is any amino acid

<400> 327

Cys Xaa Xaa Xaa
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<210> 328
<211> 6
<212> PRT
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<220>
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<223> Xaa in locations 2 to 6 is any amino acid

<400> 328

Cys Xaa Xaa Xaa Xaa Xaa
1 5

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<210> 329
<211> 5
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<220>
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<223> Xaa in locations 2 to 5 is any amino acid

<400> 329

Cys Xaa Xaa Xaa Xaa
1 5

<210> 330
<211> 4
<212> PRT
<213> *Ancylostoma caninum*

<220>
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<223> Xaa in locations 2 to 4 is any amino acid

<400> 330

Cys Xaa Xaa Xaa
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<210> 331
<211> 15
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<220>
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<223> Xaa in location 2 and locations 4 to 15 is any amino acid

<400> 331

Cys Xaa Cys Xaa
1 5 10 15

<210> 332

<211> 14

<212> PRT

<213> Ancylostoma caninum

<220>

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<223> Xaa in location 2 and locations 4 to 14 is any amino acid

<400> 332

Cys Xaa Cys Xaa Xaa

1

5

10

<210> 333

<211> 8

<212> PRT

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<220>

<221> Internal fragment

<223> Xaa in locations 2 to 8 is any amino acid

<400> 333

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa

1

5

<210> 334

<211> 7

<212> PRT

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<223> Xaa in locations 2 to 7 is any amino acid

<400> 334

Cys Xaa Xaa Xaa Xaa Xaa Xaa

1

5

<210> 335
<211> 6
<212> PRT
<213> Ancylostoma caninum

<220>
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<223> Xaa in locations 2 to 6 is any amino acid

<400> 335

Cys Xaa Xaa Xaa Xaa Xaa
1 5

<210> 336
<211> 26
<212> PRT
<213> Ancylostoma caninum

<220>
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<223> Xaa in locations 2 to 26 is any amino acid

<400> 336

Cys Xaa
1 5 10 15

Xaa
20 25

<210> 337
<211> 25
<212> PRT
<213> Ancylostoma caninum

<220>
<223> Internal fragment
<221> Xaa in locations 2 to 25 is any amino acid

<400> 337

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20 25

<210> 338
<211> 24
<212> PRT
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<220>
<221> Internal fragment
<223> Xaa in locations 2 to 24 is any amino acid

<400> 338

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20

<210> 339
<211> 23
<212> PRT
<213> Ancylostoma caninum

<220>
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<400> 339

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20

<210> 340
<211> 22
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
<223> Xaa in locations 2 to 22 is any amino acid

<400> 340

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa
20

<210> 341
<211> 21
<212> PRT
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<220>
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<223> Xaa in locations 2 to 21 is any amino acid

<400> 341

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa
20

<210> 342
<211> 20
<212> PRT
<213> Ancylostoma caninum

<220>
<221> Internal fragment
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<400> 342

Cys Xaa
1 5 10 15

Xaa Xaa Xaa Xaa
20

<210> 343
<211> 19
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<220>
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<400> 343

Cys Xaa
1 5 10 15

Xaa Xaa Xaa

<210> 344
<211> 18
<212> PRT
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<220>
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<223> Xaa in locations 2 to 18 is any amino acid

<400> 344

Cys Xaa
1 5 10 15

Xaa Xaa

<210> 345
<211> 17
<212> PRT
<213> *Ancylostoma caninum*

<220>
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<223> Xaa in locations 2 to 17 is any amino acid

<400> 345

Cys Xaa
1 5 10 15

Xaa

<210> 346
<211> 16
<212> PRT
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<220>
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<223> Xaa in locations 2 to 16 is any amino acid

<400> 346

Cys Xaa
1 5 10 15

<210> 347
<211> 15
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<220>
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<400> 347

Cys Xaa
1 5 10 15

<210> 348
<211> 14
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<223> Xaa in locations 2 to 14 is any amino acid

<400> 348

Cys Xaa
1 5 10

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Cys Xaa
1 5 10

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<220>
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<210> 352
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1 5

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Leu Xaa Arg Xaa
1